

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	January 9, 2021
Hours:	19:00 Hours

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Name of Feeders	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	71.20	400kV THP - Siliguri Fdr- I	0.00		Unit-II, V & VI under shutdown. Unit-III on standby. 400kV THP-SIL Fdr I on Standby. 400kV THP-SIL Fdr II under AMP.
		Unit- II	0.00	400kV THP - Siliguri Fdr- II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Fdr- IV	45.81	+	
		Unit- IV	100.35	400kV THP - Malbase Fdr- III	121.36	+	
		Unit- V	0.00	400kV Malbase - Siliguri	31.00	+	
		Unit- VI	0.00	-	-	-	
		Total	171.55	Error at Station/Auxiliary Consumption/Losses	2.553%		
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Fdr - I	0.00		Unit-I on standby. Unit-II under shutdown. Unit-III under breakdown. 400kV MHP-JLG Fdr I,III & IV on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Fdr - II	114.53	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	115.19	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	115.19	Error at Station/Auxiliary Consumption/Losses	0.573%		
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Fdr- I	-4.90	-	Unit-I under Annual Maintenance Unit-IV under standby.
		Unit- II	50.49	220kV CHP - Birpara Fdr- II	-4.70	-	
		Unit- III	46.06	220kV CHP - Malbase Fdr- III	28.80	+	
		Unit- IV	0.00	220kV CHP - Semtokha Fdr- IV	55.80	+	
		-	-	220kV Malbase - Birpara Fdr.	-31.00	-	
		-	-	66kV CHP - Chumdo Fdr.	16.30	+	
		-	-	66kV CHP - Gedu Fdr.	2.40	+	
		-	-	3x3MVA, 66/11kV TFR	0.40	+	
		Total	96.55	Error at Station/Auxiliary Consumption/Losses	2.538%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	11.40	+	U/S Unit-I & L/S Unit-I under AMP.
		Unit- II	7.10	66kV BHP - Lobeysa Fdr.	15.80	+	
	Total	7.10	220kV BHP - Tsirang Fdr.	-7.03	-		
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.80	+	
Unit- II		14.90	30MVA ICT, 220/66kV				
		Total	14.90	Error at Station/Auxiliary Consumption/Losses	4.682%		
5	126MW DHPC	Unit-I	0.00	220kV DHPC - Tsirang Fdr.	23.45	+	Unit-I on standby.
		Unit-II	23.69	220kV Jigmeling - Dagapela Fdr.	2.50	+	
		-	-	5MVA, 220/33kV TFR			
		Total	23.69	Error at Station/Auxiliary Consumption/Losses	1.013%		
6	60MW KHP	Unit- I	10.00	132kV KHP - Nangkhon Fdr- I	5.99	+	Unit-IV standby Unit-II under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Fdr- II	13.48	+	
		Unit- III	10.50	5MVA, 132/11kV TFR	0.43	+	
		Unit- IV	0.00	132kV Gelephu - Salakati Fdr.	-21.78	-	
		-	-	132kV Motanga - Rangia Fdr.	0.13	-	
		-	-	220kV Tsirang - Jigmeling	13.02	+	
		Total	20.50	Error at Station/Auxiliary Consumption/Losses	2.927%		

Note: Generation-Load Summary for January 09, 2021 at 19:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	313.79	264.56	258.96	36.21	5.60
2	Eastern Grid	135.69	55.83	54.57	92.88	1.26
	Total	449.48	320.39	313.53	129.09	6.86

Note: Generation-Load Summary for January 09, 2020 at 19:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	424.70	281.32	273.46	119.78	7.86
2	Eastern Grid	132.76	58.32	58.81	98.04	-0.49
	Total	557.46	339.64	332.27	217.82	7.37

NOTE- KHP,MHP & Motanga data collected from site.

- The Instantaneous load balance is calculated as (Total generation - (Total export-Import) - Total domestic load) do not tend towards zero. This could be due to the following reasons:
 - Not all the meters are digital and nor are all the meter at all locations can be read at same time (say 9:00hrs) due to many meter to be read manually.
 - The clocks of all the locations are not synchronized.
- This report is generated to give an idea of the generation & load flow for the system at a particular instant.

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Maximum Load/Demand till Date

Date:	January 10, 2021
Hours:	09:00 Hours

Date	Time	Load(MW)
27-Dec-18	18:18hrs	399.35MW

Sl. No.	Hydropower Plant	Unit	MW	Name of Feeders	Load (MW)	Sign	Remarks
1	1020MW THP	Unit- I	70.82	400kV THP - Siliguri Fdr- I	0.00		Unit-II, V & VI under shutdown. Unit-III on standby. 400kV THP-SIL Fdr I on Standby. 400kV THP-SIL Fdr II under AMP.
		Unit- II	0.00	400kV THP - Siliguri Fdr- II	0.00		
		Unit- III	0.00	400kV THP - Siliguri Fdr- IV	50.40	+	
		Unit- IV	100.59	400kV THP - Malbase Fdr- III	116.58	+	
		Unit- V	0.00	400kV Malbase - Siliguri	40.00	+	
		Unit- VI	0.00	-	-	-	
		Total	171.41	Error at Station/Auxiliary Consumption/Losses	2.584%		
2	720MW MHP	Unit-I	0.00	400kV MHP - Jigmeling Fdr - I	0.00		Unit-I on standby. Unit-II under shutdown. Unit-III under breakdown. 400kV MHP-JLG Fdr I, III & IV on standby.
		Unit-II	0.00	400kV MHP - Jigmeling Fdr - II	118.90	+	
		Unit-III	0.00	400kV MHP - Jigmeling Fdr - III	0.00		
		Unit-IV	119.40	400kV MHP - Jigmeling Fdr - IV	0.00		
		-	-	200MVA, 400/132kV ICT			
		-	-	(Local Load)			
		Total	119.40	Error at Station/Auxiliary Consumption/Losses	0.419%		
3	336MW CHP	Unit- I	0.00	220kV CHP - Birpara Fdr- I	3.28	+	Unit-I under Annual Maintenance Unit-IV under standby.
		Unit- II	44.51	220kV CHP - Birpara Fdr- II	3.38	+	
		Unit- III	45.73	220kV CHP - Malbase Fdr- III	44.87	+	
		Unit- IV	0.00	220kV CHP - Semtokha Fdr- IV	19.84	+	
		-	-	220kV Malbase - Birpara Fdr.	-26.00	-	
		-	-	66kV CHP - Chumdo Fdr.	10.26	+	
		-	-	66kV CHP - Gedu Fdr.	3.04	+	
		-	-	3x3MVA, 66/11kV TFR	1.20	+	
		Total	90.24	Error at Station/Auxiliary Consumption/Losses	4.843%		
4	24MW BHP (U/S)	Unit- I	0.00	220kV BHP - Semtokha Fdr.	22.70	+	U/S Unit-I & L/S Unit-I under AMP.
		Unit- II	7.00	66kV BHP - Lobeysa Fdr.	12.36	+	
		Total	7.00	220kV BHP - Tsirang Fdr.	-13.54	-	
	40MW BHP (L/S)	Unit- I	0.00	5MVA, 66/11kV TFR	0.56	+	
		Unit- II	14.73	30MVA ICT, 220/66kV			
		Total	14.73	Error at Station/Auxiliary Consumption/Losses	-1.611%		
5	126MW DHPC	Unit-I	0.00	220kV DHPC - Tsirang Fdr.	23.46	+	Unit-I on standby.
		Unit-II	23.68	220kV Jigmeling - Dagapela Fdr.	1.60	+	
		-	-	5MVA, 220/33kV TFR			
		Total	23.68	Error at Station/Auxiliary Consumption/Losses	0.929%		
6	60MW KHP	Unit- I	0.00	132kV KHP - Nangkhon Fdr- I	8.58	+	Unit-I standby Unit-II under Annual Maintenance.
		Unit-II	0.00	132kV KHP - Kilikhar Fdr- II	10.39	+	
		Unit- III	10.04	5MVA, 132/11kV TFR	0.28	+	
		Unit- IV	10.11	132kV Gelephu - Salakati Fdr.	-15.02	-	
		-	-	132kV Motanga - Rangia Fdr.	-0.23	+	
		-	-	220kV Tsirang - Jigmeling	8.81	+	
		Total	20.15	Error at Station/Auxiliary Consumption/Losses	4.467%		

Note: Generation-Load summary for January 10, 2021 at 09:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	307.06	227.19	220.12	71.06	7.07
2	Eastern Grid	139.55	44.71	43.31	103.65	1.40
	Total	446.61	271.90	263.43	174.71	8.47

Note: Generation-Load Summary for January 10, 2020 at 09:00hrs

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Load Balance (MW)
1	Western Grid	334.23	241.23	233.45	74.66	7.78
2	Eastern Grid	143.26	59.87	53.95	101.73	5.92
	Total	477.49	301.10	287.40	176.39	13.70

NOTE: MHP,KHP & Motanga data collected from site.

- The Instantaneous load balance is calculated as (Total generation - (Total export-Import) - Total domestic load) do not tend towards zero. This could be due to the following reasons:
 - Not all the meters are digital and nor are all the meter at all locations can be read at same time (say 9:00hrs) due to many meter to be read manually.
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